

Tank Farm Soil Field Sampling Plan for the Phase I Operable Unit 3-14 Remedial Investigation/Feasibility Study

1. INTRODUCTION

This Waste Area Group (WAG) 3, Operable Unit (OU) 3-14, Field Sampling Plan (FSP) describes the Phase I Tank Farm soil characterization investigation activities that will be performed in support of the work plan for the OU 3-14 Remedial Investigation/Feasibility Study (RI/FS) of the Idaho Nuclear Technology and Engineering Center (INTEC) Tank Farm (DOE-ID 2000a and 2000b). A map showing the locations of the INTEC and the Tank Farm at the Idaho National Engineering and Environmental Laboratory (INEEL) is provided in Figure 1-1. The FSP also describes the details, processes, and programs that will be used to ensure that the data generated are suitable for their intended uses. In accordance with the Federal Facility Agreement and Consent Order (FFA/CO) (DOE-ID 1991), the FSP is one part of a two-part Sampling and Analysis Plan (SAP). The second part of the SAP is the Quality Assurance Project Plan (QAPjP). The governing QAPjP for this sampling effort is the *Quality Assurance Project Plan for WAGs 1, 2, 3, 4, 5, 6, 7, 10, and Inactive Sites* (DOE-ID 2000b). The field sampling activities also will be conducted in accordance with the *Implementing Project Management Plan for the Idaho National Engineering and Environmental Laboratory Remediation Program* (LMITCO 1998a, Section 13), which, along with the QAPjP, establishes the quality requirements for INEEL environmental restoration activities.

These plans have been prepared pursuant to the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations [CFR] 300) and guidance from the U.S. Environmental Protection Agency (EPA) for the preparation of SAPs (EPA 1988).

1.1 Field Sampling Plan

The purpose of this FSP is to guide the collection and analysis of samples from the Tank Farm soil. The overall objectives:

- Delineate the horizontal and vertical extent of known contamination in the Tank Farm
- Define radiological hotspots in the Tank Farm surface soil, from 0 to 3 m (0 to 10 ft) below ground surface (bgs)
- Define radiological hotspots in the Tank Farm soil, from 0 to 14 m (0 to 45 ft)
- Provide technical data to support the feasibility study (FS) phase of the OU 3-14 RI/FS
- Provide technical data to support the Phase II characterization investigation activities and contaminant studies
- Characterize removed soil for archive storage and subsequent disposition.

The Tank Farm soil has been contaminated by radioactive liquids due to past spills and pipeline leaks from plant and transfer operations. In addition to several known highly contaminated areas, low levels of contamination are suspected to exist at varying locations and depths throughout the Tank Farm subsurface. Contaminant type, concentration, and areal extent of known spill volumes are poorly characterized and are completely unknown for other suspected spill locations. According to the OU 3-13 Record of Decision (ROD), the principal threats posed by contaminated Tank Farm soil are external radiation exposure and contamination of underlying perched groundwater and the Snake River Plain Aquifer (SRPA). Contaminated media to be collected during Phase I will be stored as archive material to be used in proposed feasibility studies, Phase II characterization activities, and contaminant studies.

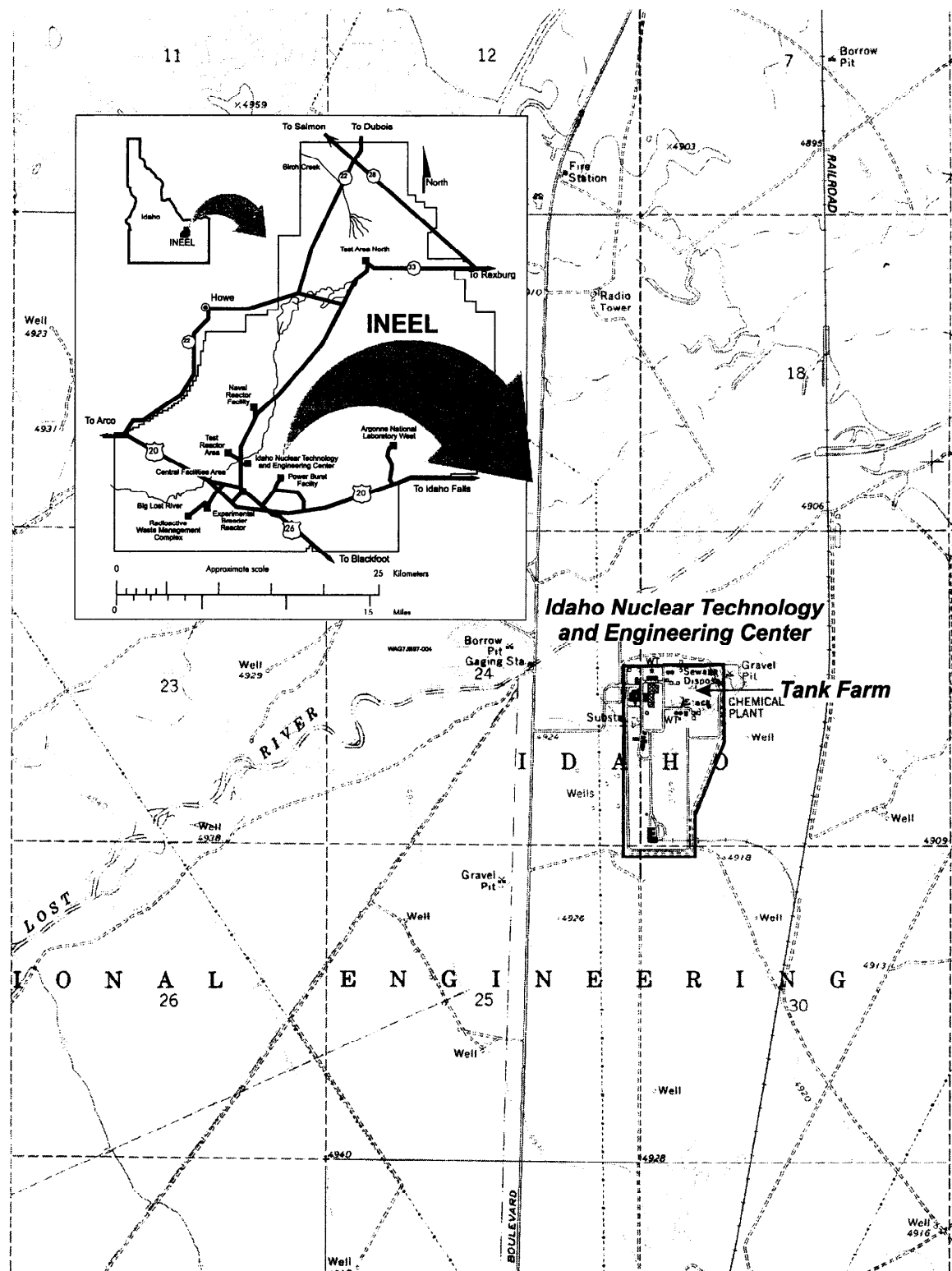


Figure 1-1. Map of the INTEC at the INEEL (topography adapted from United States Geological Survey (USGS) Circular Butte 3SW, contour interval 10 ft, scale 1:24000) showing the Tank Farm.

The Tank Farm soil is defined as soil from the surface to the uppermost underlying basalt flow, and includes release Sites CPP-15, CPP-16, CPP-20, CPP-24, CPP-25, CPP-26, CPP-27, CPP-28, CPP-30, CPP-31, CPP-32, CPP-33, CPP-58, CPP-79, and CPP-96. These sites are shown in Figure 1-2. All of these Tank Farm soil sites are consolidated within Site CPP-96.

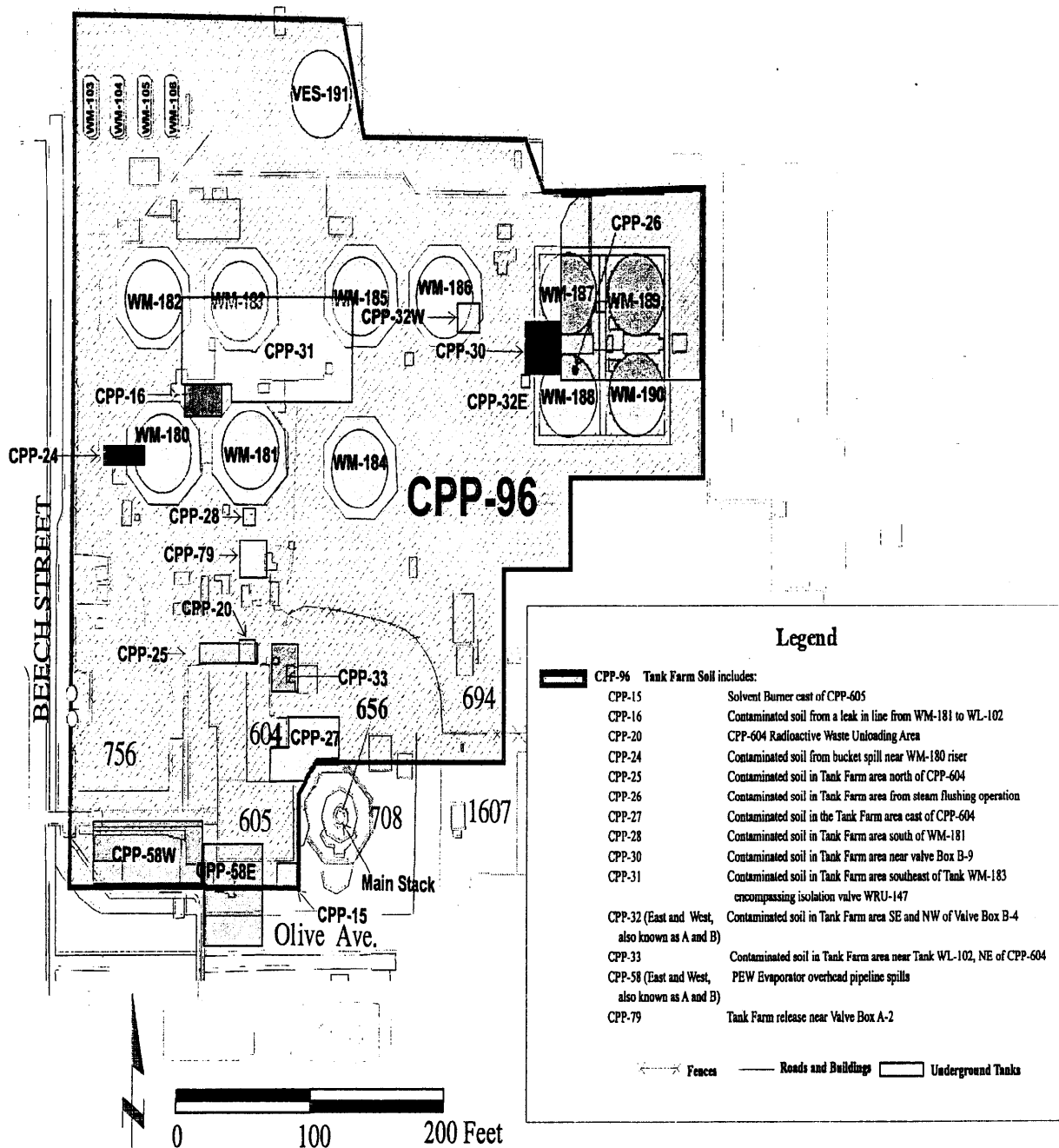


Figure 1-2. Known OU 3-14 Tank Farm soil release sites.

1.2 Health and Safety Plan

The "Phase I Tank Farm Soil Health and Safety Plan for the Operable Unit 3-14 RI/FS" (INEEL 2000) is the governing Health and Safety Plan (HASP) for this FSP. The HASP will be amended, as appropriate, through a document action request (DAR) before the commencement of any field activities.

1.3 Project Organization and Responsibilities

The organizational structure reflects the personnel resources and expertise required for the work activities discussed in this FSP, concurrently achieving minimization of the risks to worker health and safety. Job titles, responsibility delineation, and communication chains of personnel who will be filling key roles at the work site are listed on the chart in Figure 1-3. This subsection outlines the responsibilities of key work site personnel.

1.3.1 Environmental Restoration Program Director

The INEEL Environmental Restoration (ER) Director has ultimate responsibility for the technical quality of all projects, while maintaining a safe environment, and the safety and health of all personnel during field activities performed by or for the ER program. The ER director provides technical coordination and interfaces with the U.S. Department of Energy, Idaho Operations Office (DOE-ID) Environmental Support Office. The ER director is responsible for ensuring that:

- Project and program activities are conducted in accordance with all applicable federal, state, local, and company requirements and agreements
- Program budgets and schedules are approved and monitored for compliance
- Personnel, equipment, subcontractors, and services are available
- Direction is provided for development of tasks, evaluation of findings, development of conclusions and recommendations, and production of reports.

1.3.2 Waste Area Group 3 Manager

The WAG 3 Manager has overall responsibility to ensure that the OU 3-14 project meets the agreements and requirements defined in the OU 3-14 RI/FS scope of work and work plan. This responsibility includes the overall planning, organizing, directing, measuring, and reporting of project performance. Effective and timely communications with DOE-ID are a pivotal part of this responsibility. Other specific responsibilities that the WAG manager executes include, but are not limited to the following:

- Establishing and maintaining the technical, cost, and schedule baselines for the project, including performance measurement, control, and reporting requirements
- Forecasting and managing funding requirements
- Identifying, characterizing, and coordinating configuration change requirements involving baselines

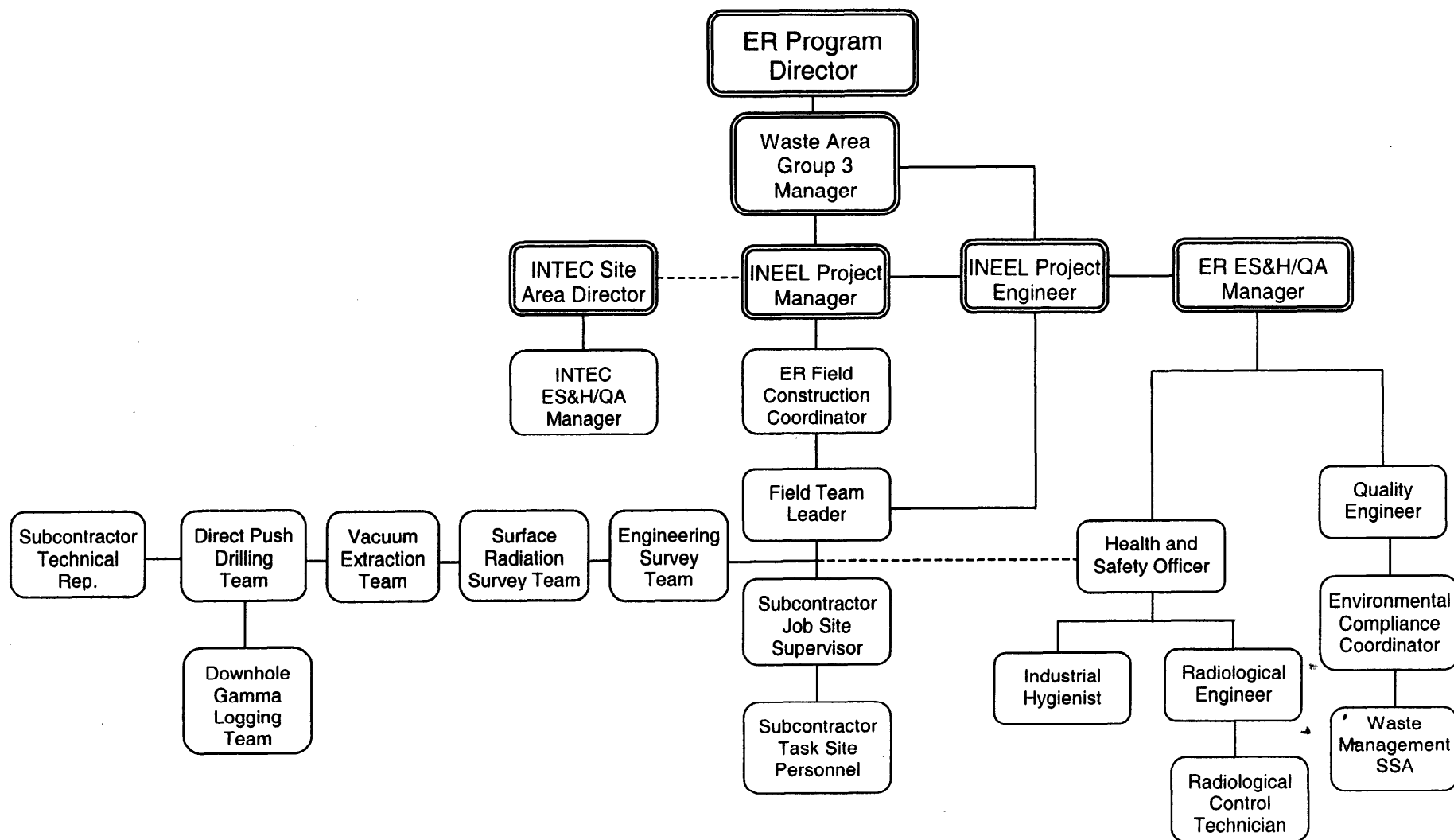


Figure 1-3. Organizational structure for OU 3-14 field sampling activities.

- Preparing quarterly and year-end project reports for DOE-ID
- Managing project risks
- Managing self-assessments
- Serving as the INEEL point of contact for organization, coordination, and participation in Agency meetings, conference calls, customer briefings, and news media inquiries relative to projects in WAG 3
- Approving change control actions.

1.3.3 INEEL Project Manager

The INEEL project manager (PM) is responsible for ensuring that all activities conducted during the project comply with INTEC site director requirements. The requirements are outlined in Management Control Procedure (MCP) -2798, "Maintenance Work Control," and MCP-3003, "Performing Pre-Job Briefings and Post-Job Reviews," as well as INEEL program requirements documents (PRDs), Occupational Safety and Health Administration (OSHA) requirements, and all applicable EPA, U.S. Department of Energy (DOE), U.S. Department of Transportation (DOT), and State of Idaho requirements. The tasks must comply with the *Implementing Project Management Plan for the Idaho National Engineering and Environmental Laboratory Remediation Program* (LMITCO 1998a), the QAPjP, the project HASP, and this FSP. The PM also is responsible for the overall scope, schedule, and budget of the project. The PM has the following functions and responsibilities:

- Coordinate all document preparation and field, laboratory, and modeling activities
- Ensure that the Enhanced Work Planning process is implemented
- Ensure that a prejob briefing and a post-job review are performed
- Implement the FSP requirements
- Ensure that work is performed as planned for the project
- Develop resource-loaded, time-phased control account plans based on the technical requirements, budgets, and schedules of the project
- Assign project tasks
- Ensure technical review and acceptance of all project documentation
- Develop documentation required to support the FSP
- Develop site-specific plans that are required by Environmental Restoration (ER) such as work plans, environment, safety, and health (ES&H) plans, and SAPs
- Ensure that project activities and deliverables meet schedule and scope requirements as described in the FFA/CO Action Plan (DOE-ID 1991)

- Identify requirements and follow the schedule for public review and the comment process as set forth in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC § 9601 et seq.)
- Coordinate and interface with the units who provide project support within the program support organization on issues relating to quality assurance (QA), ES&H, and the National Environmental Policy Act (NEPA) (42 USC § 4321 et seq.)
- Coordinate site-specific data collection, review for technical adequacy, and data input to an approved database such as the Environmental Restoration Information System
- Coordinate and interface with subcontractors to ensure that milestones are met, adequate management support is in place, technical scope is planned and executed appropriately, and project costs are kept within budget.

1.3.4 INEEL Project Engineer

The INEEL Project Engineer is in charge of day-to-day technical operations of the project and long-term technical planning.

1.3.5 The INTEC Site Area Director

The INTEC site area director (SAD) or designee has the authority and responsibility to ensure proper guidance of all activities within the INTEC for all work processes and work packages including but not limited to:

- Establish and execute monthly, weekly, and daily operating plans
- Execute the INTEC Environment, Safety, and Health/Quality Assurance (ES&H/QA) program
- Execute the Integrated Safety Management System (ISMS) for the INTEC
- Execute the Enhanced Work Planning process for the INTEC
- Execute the Voluntary Protection Program (VPP) in the Tank Farm
- Oversee the execution of all environmental compliance within the Tank Farm.

1.3.6 Environmental Restoration, Environmental Safety, and Health/Quality Assurance Manager

The ER ES&H/QA manager or designee is responsible for ensuring that ES&H oversight is provided for all ER programs and projects. This position reports to and is accountable to the ER program director. The ER ES&H/QA manager performs line management review, inspections, and oversight in compliance with MCP-2727, Performing Safety Reviews. Project or program management shall bring all ES&H/QA concerns, questions, comments, and disputes that cannot be resolved by the health and safety officer (HSO) or one of the assigned ES&H professionals to the ER ES&H/QA manager or respective compliance officer.

1.3.7 ER Field Construction Coordinator

The field construction coordinator (FCC) is the construction supervisor for the project. The FCC manages field operations, executes the work plan, enforces site control, and is responsible to ensure that prejob briefings are conducted in accordance with MCP-3003, "Performing Prejob Briefings and Post-Job Reviews." " All safety issues must be brought to the attention of the FCC. The FCC will work with the field team leader (FTL), HSO, and RadCon personnel to resolve safety and health issues. This person will provide facility support and coordinate and oversee the contracts (i.e., approve the subcontractor hours).

1.3.8 INTEC ES&H/QA Manager

The INTEC ES&H/QA manager or designee is responsible for ensuring that ES&H oversight is provided for all ER programs and projects. This position reports to and is accountable to the INTEC site director. The INTEC ES&H/QA manager performs line management review, inspections, and oversight in compliance with MCP-2727, "Performing Safety Reviews." Project or program management will bring all ES&H/QA concerns, questions, comments, and disputes that cannot be resolved by the HSO or one of the assigned ES&H professionals to the ER ES&H/QA manager or to the INTEC ES&H/QA manager.

1.3.9 Health and Safety Officer

The HSO works at the task site and serves as the primary contact for health and safety issues. The HSO assists the field team leader (FTL) (see Section 1.3.13) on all aspects of health and safety including compliance with the Enhanced Work Planning process, and is authorized to stop work at the task site if any operation threatens worker safety or public health. The HSO may be assigned other responsibilities, as stated in other sections of the project HASP, as long as primary responsibilities are maintained. The HSO is authorized to verify compliance to the HASP, conduct inspections, require and monitor corrective actions, monitor decontamination procedures, and require corrections, as appropriate. ES&H professionals at the task site support the HSO. These professionals are the industrial hygienist (IH), radiological control technician (RCT), radiological engineer, environmental compliance coordinator, and facility representative.

The individual assigned as the HSO or designee must be qualified in accordance with the OSHA definition to recognize and evaluate hazards and will be given the authority to ensure worker protection.

The HSO may also perform the IH or, in some cases, the FTL duties. The dual role of the HSO and FTL will depend upon the hazards, complexity, and size of the activity involved at the task site and will require concurrence from the ER ES&H/QA manager (see Section 1.3.6). Other pertinent responsibilities of the HSO must not conflict (philosophically or in terms of significant added volume of work) with the role of the HSO at the task site.

If it is necessary for the HSO to leave the task site, an alternate individual will be appointed by the HSO to fulfill this role, the identity of the acting HSO will be recorded in the FTL logbook, and task site personnel will be notified.

1.3.10 Industrial Hygienist

The assigned IH is the primary source for information about non-radiological hazardous and toxic agents at the task site. The IH will assist the FTL and the HSO in completing the job requirements checklist (JRC) and will assess the potential for worker exposures to hazardous agents in accordance with

the INEEL *Safety and Health Manual*, Manual 14A, MCPs, and accepted industry IH practices and protocol. By participating in task-site characterization, the IH assesses and recommends appropriate hazard controls for the protection of task site personnel, operates and maintains airborne sampling and monitoring equipment, and recommends and assesses personal protective equipment (PPE) required in the project HASP, recommending changes as appropriate.

If an evacuation becomes necessary, then following an evacuation, the IH, in conjunction with the recovery team, assists the FTL in determining whether conditions exist for safe task site reentry, as described in the project HASP. Personnel showing health effects (i.e., signs and symptoms) resulting from possible exposure to hazardous agents will be referred to the Occupational Medical Program physician by the IH, their supervisor, or the HSO. The IH may have other duties at the task site, as specified in the project HASP, or by pertinent INEEL PRDs or MCPs. During emergencies involving hazardous materials, the subsequent airborne sampling and monitoring results will be coordinated with the INEEL Emergency Response Organization.

1.3.11 Radiological Engineer

The radiological engineer is the primary source for information and guidance relative to the evaluation and control of radioactive hazards at the task site. If a radiological hazard exists or occurs at the task site, the radiological engineer makes recommendations to minimize health and safety risks to task site personnel. Responsibilities of the radiological engineer include the following:

- Perform radiation exposure estimates and as low as reasonably achievable evaluations
- Recommend pertinent radiological monitoring equipment necessary for the work
- Advise the FTL and RCT of changes in monitoring or PPE
- Apprise personnel of task site evacuation and reentry.

The radiological engineer may have to perform evaluations that are specified in MCP-425, "Survey of Materials for Unrestricted Release and Control of Movement of Contaminated Material," for release of materials with inaccessible surfaces. The radiological engineer also may have other duties to perform, as specified in the project HASP or in the INEEL *Radiation Protection, INEEL Radiological Control*, Manual 15A (PRD-183).

1.3.12 Radiological Control Technician

The RCT is the primary source for information and guidance on radiological hazards. During work operations when a radiological hazard to personnel may exist or is anticipated, the RCT is present at the task site. The RCT assists the FTL in completing the JRC. Responsibilities of the RCT include conducting a radiological survey of the task site with the necessary equipment and obtaining samples, providing guidance for radioactive decontamination of equipment and personnel, and accompanying the affected personnel to the nearest INEEL medical facility for evaluation if significant radiological contamination occurs. The RCT must notify the FTL of any radiological occurrence that must be reported as directed by the *Radiation Protection, INEEL Radiological Control*, Manual (PRD-183). The RCT may have other duties at the task site as specified in the project HASP or by the INEEL PRDs or MCPs.

1.3.13 Field Team Leader

The FTL represents the ER organization at the task site and is responsible for the safe and successful completion of the project. The FTL works with the PM to manage field sampling and related operations, and executes the work plan. The FTL enforces task site control, documents the activities, and may conduct the daily safety briefings at the start of a shift. Health and safety issues must be brought to the attention of the FTL.

If the FTL leaves the task site, a designee is appointed to act as the FTL. The acting FTL must meet all the FTL training requirements as outlined in the project HASP. The identity of the acting FTL is conveyed to task site personnel, recorded in the FTL logbook, and communicated to the INTEC director, or designee.

The FTL complies with the requirements outlined in MCP-3003, "Performing Pre-Job Briefings and Post-Job Reviews," by completing the briefings and reviews and submitting the documentation to the INTEC site director and ER ES&H/QA manager. The FTL also completes the JRC in accordance with MCP-2798, "Maintenance Work Control."

The FTL is responsible for compliance with waste management requirements and coordinates such activities with the environmental compliance coordinator or designee.

1.3.14 Engineering Survey Team

The engineering survey team will survey in all proposed borehole locations that have been approved according to the FSP or work plan, using appropriate engineering survey equipment.

1.3.15 Surface Gamma Radiation Survey Team

The surface gamma radiation survey team is responsible for running the surface radiation tool on surveyed data collection location and collecting readings. These readings will be analyzed to produce a map of the surface radiation activities in the Tank Farm. The team will accomplish all tasks that are associated with calibration, data measurement, recognizing anomalous or skewed data, and mobilization and demobilization on the site. The FTL provides oversight.

1.3.16 Vacuum Excavation Team

The vacuum excavation team will perform a subsurface investigation prior to the push drilling task. This task is necessary to ensure that no subsurface structures are encountered while push drilling in the Tank Farm. The team accomplishes all tasks that are associated with vacuuming surface soil to 15 ft (4.6 m) bgs. This includes mobilization, vacuuming, backfilling, demobilizing, and relocating the equipment until all the designated boreholes have been investigated. Safety procedures will be followed according to the HASP. The FTL will provide project oversight.

1.3.17 Direct Push Drilling Team

The direct push drilling team performs all tasks associated with direct push installation of the probehole casings. Team members will report to the subcontractor job site supervisor (JSS). The team will be responsible for direct push drilling and installation per the FSP.

1.3.18 Downhole Gamma Radiation Logging Team

The downhole gamma radiation logging team performs a downhole gamma radiation survey in existing boreholes and newly completed probeholes. The downhole radiation survey will provide a means to evaluate the distribution of soil contamination in the subsurface. The downhole survey will produce log plots that can be correlated between boreholes/probeholes to estimate the extent of contaminated soil zones. The report will be submitted to the PM for review.

1.3.19 Subcontractor Job Site Supervisor

A subcontractor JSS is the subcontractor safety representative at the task site. The subcontractor JSS supervises subcontractor personnel at the task site and may also serve as the subcontractor PM. The subcontractor JSS and FTL work as a team to accomplish day-to-day operations at the task site, identify and obtain additional resources needed at the task site, and interact with the HSO, IH, radiological engineer, and RCT about health and safety matters. The subcontractor JSS, like the FTL, must be informed about any health and safety issues that arise and may stop work at the task site if an unsafe condition exists. The subcontractor JSS will provide information to the FTL about the nature of their work for input at the daily prejob briefing.

1.3.20 Subcontractor Task Site Personnel

All subcontractor task site personnel must understand and comply with the requirements of the project HASP. The FTL or JSS at the task site brief personnel at the start of each shift. During the prejob briefing, all daily tasks, associated hazards, engineering and administrative controls, required PPE, work control documents, and emergency conditions and actions are discussed. Input is provided from the project HSO, IH, and RADCON personnel to clarify task health and safety requirements. All personnel are encouraged to ask questions about site tasks and provide suggestions on ways to perform required tasks in a safer and more effective manner, based on the lessons learned from previous activities.

Once at the task site, personnel are responsible for identifying to the FTL, JSS, or HSO any potentially unsafe situations or conditions for corrective action. If it is perceived that an unsafe condition poses an imminent danger, task site personnel are authorized to stop work immediately and notify the FTL, JSS, or HSO.

1.3.21 Quality Engineer

The quality engineer provides guidance on task site quality issues, when requested. The quality engineer observes task site activities and verifies that the operations comply with the pertinent quality requirements. The quality engineer identifies activities that do not comply or have the potential for not complying with quality requirements and suggests corrective actions. Corrective actions are submitted to the PM.

1.3.22 Environmental Compliance Coordinator

The environmental compliance coordinator oversees, monitors, and advises the PM and FTL on environmental issues and concerns by ensuring compliance with DOE orders, EPA regulations, and other regulations concerning the effects of task site activities on the environment. The environmental compliance coordinator provides support surveillance services for hazardous waste storage, surface water or storm water runoff control, and ensures compliance with the Stormwater Pollution Prevention Plan. The environmental compliance coordinator assists the FTL in completing the JRC.

1.3.23 Waste Generator Services

Waste Generator Services is responsible for characterizing, classifying, and shipping waste including investigation-derived waste that is generated from sampling, decontamination, and emergency situations.

1.3.24 Nonworkers

All persons who may be on the project task site, but not part of the field team, are considered nonworkers for the purposes of this project (e.g., surveyors, equipment operators, or other crafts personnel not assigned to the project). A person shall be considered "onsite" when he or she is in or beyond the designated support zone. Nonworkers will be deemed occasional site workers in accordance with 29 CFR 1910.120 and 1926.65 and must meet minimum training requirements for such workers as described in the OSHA standard and any additional site-specific training as identified in the project HASP.

All nonworkers, including INEEL employees who are not working on the project or who are nonessential representatives of DOE or state or federal regulatory agencies, may not proceed beyond the support zone receive task-specific HASP training, sign a task-specific HASP training acknowledgment form, receive a safety briefing, wear the appropriate protective equipment, and provide proof of meeting the training requirements specified in the project HASP. A fully trained task site representative such as the FTL, JSS, HSO, or designee, escorts nonworkers at all times while on the task site.

1.3.25 Visitors

All visitors, including INEEL employees who are not working on the project or who are nonessential representatives of DOE or state or federal regulatory agencies, may not proceed beyond the support zone unless they meet the following criteria: receive task-specific HASP training, sign a task-specific HASP training acknowledgment form, receive a safety briefing, wear the appropriate protective equipment, and provide proof of meeting the training requirements specified in the project HASP. A fully trained task site representative such as the FTL, JSS, HSO, or designee, escorts visitors at all times while on the task site.

A casual visitor to the task site is a person who does not have a specific task to perform or other official business to conduct. Casual visitors are not permitted at the task site for the Tank Farm characterization.